

Operations and Algebraic Thinking Lesson.

The concept of zero, with positive and negative numbers.
Elevation and bank accounts used.

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Date created: February 20, 2017

Basic Information

Summary	Students will use negative and positive numbers in real-world strategies as well as the number zero. Students use positive and negative numbers to indicate a change (gain or loss) in elevation with a fixed reference point, temperature, and the balance in a bank account. Students use vocabulary precisely when describing and representing situations involving integers; for instance, an elevation of -10 feet is the same as 10 feet below the fixed reference point. Students choose an appropriate scale for the number line when given a set of positive and negative numbers to graph.
Grade/Level	Sixth Grade
Time Frame	One Class (forty-six minutes)
Subject(s)	Math
Topic(s)	Operations and Algebraic thinking. Positive and Negative numbers and the number zero.
Notes	Discussion on how the real-world elements meet the world fully will more than likely need to be explained. Use of models or websites can be used. Notes have also been made in the accompanying documents (please see attached).

Standards and Key Concepts

Standards	<p>The Number System: Apply and Extend Previous Understandings Of Numbers To The System Of Rational Numbers.</p> <p>Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.</p> <p>CCLS - Math: 6.NS.5</p> <hr/>
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Understandings	Understand how elevation works in relation to the ground and sea level. Using a number line to record data pertaining to elevation. Correlate the negative and positives of elevation from zero to the concept of keeping a bank account. The concept of integers.
Essential Questions	I. Students should identify common misconceptions of how to represent an answer based on the phrasing of a question. II. Elevation is the height of a person, place, or thing above or below a certain reference point. In this case, what is the reference point? III. How did we record measures of elevation on a number line?
Knowledge and Skills	<ul style="list-style-type: none">- How to use an elevation chart.- The concept of zero.- The concepts of positive and negative numbers.- How height works as unit of measurement.

Performance Tasks and Assessment

Performance Task	Students will answer questions on worksheets (provided) by themselves and as a group to infer data on how elevation works in the real world. Charts and images will be used.
Performance Prompt	Students will complete given worksheets and project and turn in for a completion grade.
Assessment/Rubrics	Handouts will be given as worksheets for the students to complete and this is how student grades will be determined. During the group assignment, student's grades will be determined on how effectively they completed the task together correctly and engaged with their team to complete the correct answer.

Learning Experiences and Resources

Sequence of Activities	<ol style="list-style-type: none">1. Students along with the teacher will work on the first set of materials and walk through how to find elevation given a picture. (10 minutes)2. Students will the complete exercises 1 through 3 on their own. (3 minutes)
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	<ol style="list-style-type: none">3. Teacher will review the questions with the students and assess completion of the worksheet and need for further instruction and where to instruct more on. (3-5 minutes)4. Students will then be given a group project to work on pertaining to positive and negative numbers and the concept of zero. (15 minutes)5. Students will then hang their posters and the teacher will assess the work completed. (5-10 minutes)6. Answer questions. (2-5 minutes)7. Exit ticket to assess what the students remember on their own from the lesson. (2-5 minutes)
Differentiated Instruction	Students can be shown the video in the technology section below, or be given a different lesson per their IEP or 504. During group work, students will be assigned to appropriate partners for added assistance on the topic.
Resources	<ul style="list-style-type: none">- https://www.engageny.org/resource/grade-6-mathematics-module-3-topic-lesson-3 (Handouts are in this document.)- http://mathforlove.com/lesson/dont-break-the-bank/ (Differentiated math game.)
Technology	<ul style="list-style-type: none">• https://learnzillion.com/lesson_plans/3806-5-use-integers-opposites-and-zero-on-the-number-line-c (Alternative lesson plan.)• Video: https://www.youtube.com/watch?v=OAoLCXpao6s (Explains with visuals how the concept functions.)• Computer• Projector• Working internet• https://archive.org/details/msdos_Oregon_Trail_The_1990 (The Oregon Trail game to manage money and supplies.)